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(54) PLURAL FLUIDS DISPENSING PACKAGES

(71) We, DART INDUSTRIES INC., a Corporation organised and existing under the laws of the State of Delaware, United States of America, of 8480 Beverly Boulevard, Los Angeles, State of California, 90054, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to packages adapted for storage and dispensing of a composition useful for dyeing human hair.

Chemical compounds which are capable of being oxidized to yield colored oxidation products have been widely used by cosmetic chemists in developing hair dyeing products, such compounds being generally referred to as oxidation hair dyes. The most common of such products are based upon aromatic compounds which are capable in an alkaline medium of rapid oxidation by an oxidizing agent such as hydrogen peroxide to yield colored by-products having color shades which have a high degree of consumer appeal on application to human hair. Products based upon this concept are customarily packaged with the alkaline system containing dye chemical and hydrogen peroxide in separate packages which are mixed prior to use. This represents a relatively messy and cumbersome operation for the consumer and there has long been a need for a package in which the mixing of the ingredients is carried out automatically and where the final mixture can be dispensed directly to the hair.

There has been considerable interest expressed in recent years by workers in the art of cosmetic packaging in the concept of packages adapted to store at least two compositions which are maintained isolated from each other within the package and which combine only at the moment of dispensing. There are many applications for such plural dispensing packages, including, for example hot foam products such as shaving foams; cleansing foams, hair dye foams and the like. Mixing of the two compositions during the dispensing operation results in a chemical reaction with liberation of heat. Compositions adapted to form products of this nature, for example shaving soap formulations, are notorious foam-formers when shaken. As the contents of such a package are exhausted during normal use, shaking of the container prior to use results in the conversion of a constantly increasing proportion of the composition into foam with resulting decrease in density of the liquid phase. This contributes to incorrect proportioning and, as a result, an unsatisfactory product. There has, therefore, long been a need for a package adapted to dispense plural fluids, one of which is a foamable composition when shaken.

The present invention provides a package adapted for the dispensing of a hair dye composition, which package comprises a container with means to maintain two compositions therein isolated from each other, the first of the compositions being an oxidation hair dye composition which comprises o-aminophenol, pyrogallol, resorcinol and o-nitro-p-phenylene-diamine and the second of the compositions being an oxidising agent composition comprising hydrogen peroxide, and valve means communicating with each of the compositions whereby the application of pressure to the compositions and actuation of the valve means results in the mixing of portions of each of the compositions and dispensing of the resulting mixture from the package as a hair dye composition.

In accordance with a preferred embodiment of this invention, the oxidation hair dye composition can also include a reducing agent or a catalyst capable of reacting with or promoting the decomposition of hydrogen peroxide to liberate heat such that the dye mixture will be dispensed from the package in a warmed state.

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The manner and process of making and using the invention will now be described generally so as to enable one skilled in the art of cosmetic chemistry to make and use the same as follows:

Packages within the scope of the present invention are in the form of a container filled with two compositions which are maintained isolated from each other. One of these compositions is an oxidation hair dye composition. The oxidation hair dye compositions used in the package of the present invention all comprise o-aminophenol and o-nitro-p-phenylenediamine together with resorcinol and pyrogallol as modifiers (see below). In addition to the ingredients set out above the compositions used in the present invention may also comprise additional "oxidation hair dyes". As used herein, the term "oxidation hair dye" means any chemical capable of reacting in an alkaline medium with hydrogen peroxide to yield a colored material which is adapted for safe application to human hair to change its color. Typical chemicals within the scope of the term "oxidation hair dye" are aromatic nitro and/or amino compounds such as o- and p-phenylenediamine, 2,4-diaminoanisol, p- and m-toluylene diamine, nitro substituted o-, m- and p-phenylenediamine, o- and p-amino-phenol and nitro-substituted derivatives thereof, p-amino-diphenyl amine, p-aminodimethyl aniline, and p-aminocresol. The term "oxidation hair dye composition" also embraces a dyeing system containing mixtures of compounds as above described including systems also comprising conventional modifiers in addition to resorcinol and pyrogallol such as pyrocatechin and 2-naphthol.

The entire subject of oxidation hair dyes has been extensively described in the literature, for example in a series of articles entitled "Technology of Modern Oxidation Hair Dyes", appearing on pages 25—28, 35—37 and 47—50 in, respectively, the July, August and September (1956) issues of *American Perfumer and Aromatics*.

As described above, an oxidation hair dye is identified as a chemical capable of reacting in an alkaline medium with hydrogen peroxide to yield a colored material adapted for safe application to human hair to change its color and/or to maintain its existing color. Accordingly, the oxidation hair dye composition in the preparation of packages within the scope of the present invention preferably includes an alkaline substance adapted to produce a pH in the range of 8.5 to 10.0 in the final mixture as dispensed from the package. In accordance with normal procedures in the art of hair dyeing, this alkaline substance can be ammonia, or ammonium hydroxide which is the form in which ammonia exists in an aqueous system. Lower alkyl and lower alkanol substituted ammonium hydroxides in which the lower alkyl or lower alkanol portion contains 1 or 2 carbon atoms, for example tetramethyl ammonium hydroxide, tetraethyl ammonium hydroxide and tetraethanol ammonium hydroxide, and corresponding substituted sulfonium hydroxides, for example trimethyl-sulfonium hydroxide, are the full equivalents of ammonia (or ammonium hydroxide) in the invention.

Alternately, the alkaline substance can be a lower alkanolamine containing 2 to 4 carbon atoms, for example, monoisopropanolamine, monoethanolamine, and monobutanolamine.

The other composition, which in the package is maintained in isolation from the oxidation hair dye composition, comprises hydrogen peroxide. In the case of packages which dispense products at room temperature, the amount of hydrogen peroxide will be that reactable with the oxidation hair dye ingredient contained within the package. In accordance with other aspects of this invention where dispensing of a warmed product is desired, an additional amount of hydrogen peroxide will be present as described hereinafter.

The preferred composition comprising hydrogen peroxide will also include conventional stabilizers and preservatives for hydrogen peroxide and will, in addition, include an acid ingredient, for example phosphoric acid, in an amount sufficient to impart an acidic pH to the system to effectuate optimum stability of the hydrogen peroxide.

In the case of the dispensing of warmed compositions, heat can be generated either through chemical reduction of hydrogen peroxide by a reducing agent or by catalytic decomposition with a decomposition catalyst. The reducing agent or the catalyst is present in the composition comprising the oxidation hair dye ingredient. Useful reducing agents including sulfur dioxide and salts derived therefrom such as alkali metal sulfites and bi-sulfites, thiourea, 1-phenyl-2-thiobarbituric acid and its derivatives (this latter group being described in U.S. Patent No. 3,341,418), alkali metal sulfides, and alkali metal thiosulfates. It is essential that any reducing agent used in the preparation of packages in accordance with this invention be fully compatible with and stable in the presence of the oxidation hair dye ingredient. Alternately, heat can be generated by the catalytic decomposition of hydrogen peroxide, a reaction which liberates heat with the simultaneous formation of water and oxygen gas. Many materials are well known in the art for catalyzing such decomposition, for example, metals such as silver, lead, iron, chromium, bismuth,

copper, titanium, molybdenum and silicon, oxides and salts thereof, activated carbon, enzymatic systems such as catalase, and the like. The particular catalyst used must be stable in the presence of the oxidation hair dye ingredient and, in addition, must not catalyze the decomposition of such ingredient. It is also within the scope of the invention that a combination of both methods of heat generation be employed.

The relative proportions of hydrogen peroxide to oxidation hair dye in packages of this invention where a warmed composition is to be dispensed must be such that there is, first, sufficient hydrogen peroxide to react with the oxidation hair dye ingredient to cause the desired oxidation and, second, an additional increment of hydrogen peroxide which, upon reduction with reducing agent or decomposition with catalyst, will liberate the desired amount of heat to result in a meaningful temperature rise upon dispensing.

As described above, the two compositions are maintained isolated from each other within a container. Such a container is constructed of rigid or flexible material depending upon the pressurization means to be utilized for dispensing. A collapsible container formed of plastic or metal is used where pressurization is effected manually by squeezing. In accordance with a preferred embodiment of this invention, self-pressurization is employed through use of a liquefied propellant gas within the container in either or both of the isolated compositions and, in this case, a pressure-tight container having sufficient wall strength to withstand the propellant pressure is employed. The container can be formed of a wide class of materials used in the art of aerosol packaging such as glass, rigid plastics and metal. Such propellants must be of such a nature that they are compatible with the compositions in which they are included. Such propellants should have a vapor pressure of 12 to 85 pounds per square inch gauge at 70°F, suitable examples being saturated aliphatic hydrocarbons such as propane, butane, and isobutane, and/or chlorofluoralkanes containing not more than two carbon atoms and at least one fluorine atom and having a suitable vapor pressure. Propellant gases such as nitrogen, carbon dioxide or nitrous oxide or liquefied propellants such as dimethyl ether with a high degree of water solubility may also be used as pressurization means. Mixed propellent systems can also be employed, for example a mixture of dimethyl ether and a chlorofluoralkane or a propellant hydrocarbon such as propane, butane or isobutane or a hydrocarbon or chlorofluoroalkane in combination with a gas such as nitrogen, carbon dioxide or nitrous oxide. In addition, a modifier to adjust solubility and volatility of the propellant, such as pentane, can be present. A propellant system based upon pentane and a liquefied propellant such as the chlorofluorocarbons has been found to impart a delayed foaming of the dispensed hair dye. That is, the product emerges in the liquid state which is ideal for penetration to all hair on the head and then after a lag time of several seconds, forms a stable foam with dimensional stability, a form ideally adapted to holding and distributing the product throughout the hair. Other lower hydrocarbons and organic modifiers of like properties are the full equivalents of pentane for use in the invention.

The two compositions, formulated as described above, are packaged with a container in such a way as to remain isolated from each other. Valve means are provided to communicate with each composition such that, upon actuation of the valve means, a quantity of each composition is mixed and the resulting mixture is dispensed from the package. It is apparent that the concentration of the respective ingredients must be adjusted in relation to the proportioning properties of the valve means such that a proper mixture of the two compositions based upon the desired end use results from actuation of the valve means.

There are many different ways in which the final package can be constructed in accordance with this invention which will influence the selection of appropriate valve means and the means selected for pressurization. Several such ways are discussed hereinafter.

The package can be constructed in the form of a two-chambered container, separated by a rigid wall, with each chamber fitted with a valve leading to a common discharge conduit. Such a structure is illustrated in U.S. Patent No. 2,941,696 and with this type of package both compositions are pressurized. Alternately, structure as illustrated in U.S. Patent No. 3,295,727 can be employed in which case one of the compositions is pressurized and is present in the body portion of the container with the second composition in the illustrated chamber surrounding the dip tube. The vapor pressure of the first composition bears upon the second composition in this structure and both are dispensed upon valve actuation. U.S. Patent No. 3,272,389 illustrates another form of package construction useful in the invention. In this structure, venturi action of the pressurized composition within the container provides the motive force for dispensing the second composition.

A particularly desirable form of package for use in accordance with the invention is to utilize a package having two compartments in which the two compositions are

packaged within a pressure-tight container, the compartments being separated by a movable wall actuatable upon a pressure differential between the two compartments when the valve means affixed to the container are actuated. The composition within the container outside the movable wall is pressurized. In such a system, the movable wall can be in the form of a movable piston, for example, as illustrated in U.S. Patent No. 3,217,936, or in the form of a collapsible bag as illustrated in U.S. Patent No. 2,973,883.

It is to be understood that the disclosures of these patents are merely illustrative of various means to package the two compositions of this invention within a container and to dispense portions of both compositions to insure mixing and dispensing upon actuation of the valve means.

As stated hereinabove, a particularly desirable form of package in accordance with this invention is a two-compartmented package in which the compartments are separated by a movable wall, for example, in the form of a piston or a collapsible bag. While in the case of this type of package, as with other packages as above described, each composition can be included in either compartment, it has been found that optimum results in terms of dispensing a hair dye with reproducible dyeing effect from actuation to actuation is effected by packaging the oxidation hair dye composition within the inner compartment of the container separated from the main body portion of the container by a movable wall. As will be recorgnized by one of normal skill in the art, a liquid composition packaged within a collapsible bag or within a chamber separated from another compartment by a piston will be liquid-full with no head space throughout the dispensing life of the package when the space within the package outside the bag or piston is pressurized. It has been observed that oxidation hair dye formulations are unusually susceptible to foam production upon shaking. Inasmuch as consumers are in the habit of shaking aerosol containers before use, a composition susceptible to foam formation in a compartment with vapor head space will produce foam. This foam results in a stable gas phase within the liquid and by conversion of a portion of the liquid into a stable froth above the liquid, both factors contributing to a reduction in the density of the liquid phase. The effect becomes more pronounced as the head space increases. In accurate codispensing of two liquids through a valve, proportioning of the two liquids is necessary to form a proper mixture. In the devices described hereinabove, such proportioning is attained by maintaining uniform cross-sectional areas for flow of each liquid. Flow rates will vary through the uniform cross-sectional areas if one of the liquids is in a foamed condition and the other is in a liquid state. The problem is particularly serious if one of the liquids becomes more highly foamed as the dispensing process continues in that non-uniform proportioning results and the resulting mixture of liquids will not meet the critical standards for chemical reaction. It has been found that if the oxidation hair dye-containing composition, which is susceptible to foam formation, is packaged within a compartment having no head space, it is apparent that foaming is effectively eliminated and uniform proportioning is attained throughout the dispensing life of the package. Accordingly, the particularly effective package in accordance with this invention is that in which the two compartments are separated by a movable wall and wherein the oxidation hair dye composition is packaged in the inner compartment.

Packages of this invention are filled by conventional means. Where pressurization is brought about by a liquefied propellant included in either or both compositions, filling can be by either pressure- or cold-filling techniques.

This invention has been described with specific reference to hydrogen peroxide as the agent which oxidizes the hair dye and, in the case of dispensing a warmed composition, is subjected to catalytic decomposition or reduction to liberate heat. It is apparent that other substances of like properties can be employed in addition to hydrogen peroxide in the hydrogen peroxide containing composition, such as derivatives of hydrogen peroxide, for example, urea hydrogen peroxide and other organic and inorganic peroxides, as well as perborates and persulfates.

The two compositions may be formulated with added ingredients conventional in cosmetic products, for example humectants, fragrances, surfactants and emulsifiers to yield a product dispensed from the package with the desired degree of cosmetic elegance for optimum consumer appeal. In the case of oxidation hair dye products, the use of added surfactants of the class conventionally utilized in shampoos permit the creation of hair dyes of the "shampoo-in" type. The hydrogen peroxide compositions may contain emulsifiers where insoluble propellants are used and a readily reconstitutable emulsion is desired. Alternately, with inert gas pressurization, soluble propellants, or a two liquid phase system, the hydrogen peroxide composition can consist solely of an aqueous acid solution of hydrogen peroxide with an antioxidant.

The invention will now be further de-

scribed with reference to the following specific Examples.

All percentages quoted in the following Examples are by weight unless otherwise indicated.

EXAMPLE I

The following compositions are utilized to prepare a package of the form illustrated in U.S. Patent No. 2,973,883:

A. *Hydrogen Peroxide Composition*

	Parts by Weight
Acetophenetidin	0.04
Polyoxyethylene (2) stearyl ether	2.02
Polyoxyethylene (20) stearyl ether	1.73
Cetyl alcohol	1.00
Hydrogen peroxide (35% strength)	17.00
Phosphoric Acid (10% strength)	0.20*
Water, deionized q.s.	
	100.00

*Quantity adjusted to attain pH of about 3.75.

B. *Oxidation Hair Dye Composition (light auburn shade)*

o-Aminophenol	0.50
Pyrogallol	0.25
Resorcinol	0.20
o-Nitro-p-phenylenediamine	0.70
Oleic acid	25.00
Propylene Glycol	14.00
Butylhydroxyanisole	0.10
Isopropanol	10.00
Polyoxyethylene (4) lauryl ether	5.00
Polyoxyethylene (23) lauryl ether	5.00
Ethoxylated (25) lanolin alcohol ether	1.00
Lecithin	1.25
Disodium ethylenediamine tetraacetate	0.10
Ammonium hydroxide (28% strength)	15.00
Perfume	trace
Water, deionized q.s. to	
	100.00

Fill 96 parts by weight of Composition A into a pressure-tight container. Fill a collapsible container having a diameter smaller than the opening in the pressure-tight container with 100 parts by weight of Composition B. Insert collapsible container and affix valve means to communicate individually with the two compositions, the valve means being constructed such that actuation causes flow of Compositions A and B in the relative proportions of 1:1. Pressurize container with 4 parts by weight of a mixture of 84% isobutane −16% propane. Actuation of the valve means results in the mixing of portions of the two compositions to yield a hair dye which is dispensed at room temperature in a form ideally suited for hair dyeing purposes.

EXAMPLE II

The following compositions are utilized to prepare a package of the form illustrated in U.S. Patent No. 2,973,883:

A. *Hydrogen Peroxide Composition*
The composition is formulated as in Example 1 except that 30.00 parts of hydrogen peroxide (35% strength) are used.

B. *Oxidation Hair Dye Composition (light auburn shade)*
The composition is formulated as in Example I except that the ammonium hydroxide is increased to 19.14 parts and the following additional ingredients are added:

	Parts by Weight
Sodium Thiosulfate	4.06
Sodium Molybdate Dihydrate	0.05

The compositions are packaged and the package is pressurized as described in Example I. Actuation of the valve means results in the mixing of portions of the two compositions to yield a hair dye which is dispensed in a warmed state in a form ideally suited for hair dyeing purposes.

EXAMPLE III

The following compositions are utilized to prepare a package of the form illustrated in U.S. Patent No. 2,973,883:

A. *Hydrogen Peroxide Composition*
The composition is formulated as in Example I.

B. *Oxidation Hair Dye Composition (light auburn shade)*
The composition is formulated as in Example I except that the ammonium hydroxide is replaced by 19.14 parts by weight of monoisopropanolamine.

The compositions are packaged and the package is pressurized as described in Example I. Actuation of the valve means results in the mixing of portions of the two compositions to yield a hair dye which is

dispensed at room temperature in a form ideally suited for hair dyeing purposes.

EXAMPLE IV

The following compositions are utilized to prepare a package of the form illustrated in U.S. Patent No. 2,973,883:

A. *Hydrogen Peroxide Composition*
The composition is formulated as in Example II.

B. *Oxidation Hair Dye Composition (light auburn shade)*
The composition is formulated as in Example II except that the ammonium hydroxide is replaced by 22.0 parts by weight of mono-isopropanolamine.

The compositions are packaged and the package is pressurized as described in Example 1. Actuation of the valve means results in the mixing of portions of the two compositions to yield a hair dye which is dispensed in a warmed state in a form ideally suited for hair dyeing purposes.

EXAMPLE V

The following compositions are utilized to prepare a package of the form illustrated in U.S. Patent No. 2,973,883 for the purpose of dispensing a hair dye in a warmed state of the "shampoo-in" type.

A. *Hydrogen Peroxide Composition*

	Parts by Weight
Polyoxyethylene (2) stearyl cetyl ether	2.20
Cetyl Alcohol	3.00
Acetophenetidin	0.04
Ethylenediamine tetra-acetate tetra sodium	0.10
Polyoxyethylene (20) Stearyl Alcohol ether	1.50
Sodium lauryl ether sulfate (27%)	10.0
H_2O_2 (30%)	33.00
10% solution of H_3PO_4 (85%)	0.57*
Water, deionized q.s.	
	100.00

*ml

B. *Oxidation Hair Dye Composition*

1. Ammonium Laurate Stock

Lauric Acid	35.0
Isopropanol (99%)	14.7
Sodium Hydrosulfite	0.25
Ethylenediamine tetraacetate tetra sodium	0.25
Conc. Aqueous Ammonia (28%)	12.8
Water, deionized q.s.	
	100.00

2. Shampoo Base

Ammonium Laurate Stock (from 1 above)	18.0	
Substituted oxazoline	3.0	
Dicoco-dimethyl ammonium chloride	0.5	
N-lauryl myristyl beta amino propionic acid	0.5	
Lauroyl amide	5.0	
Triethanolamine sulfonate	8.0	
Triethanolamine salt of coconut oil fatty acids	9.0	
Sodium lauryl sulfate (30%)	9.0	
Oleic acid derivative of laurocyclo imidinium-1-ethoxyethionic acid -2-ethionic acid, di sodium salt	5.0	
Acetylated polyoxyethylene deriv. of lanolin	1.0	
Propylene Glycol	2.0	
Sodium Thiosulfate	4.0	
Sodium Molybdate	0.02	
Glycerine (99%)	4.0	
KCl	0.4	
Water, deionized q.s.		
	100.00	

adjust pH to 10.3 with 28% aqueous ammonia.

3. Final Composition

Hot Shampoo Base (from 2 above)	100.0	
p-Phenylene diamine	0.072	
p-Nitro-o-phenylene diamine	0.032	
o-Aminophenol (iron reduced)	0.032	
Pyrogallol	0.24	
Resorcinol	0.20	
o-Nitro-p-phenylene diamine	0.48	
o-Nitro-p-aminophenol	0.16	
p-Aminophenol	0.32	

Fill 92 parts by weight of Composition A into a pressure-tight container. Fill a collapsible container having a diameter smaller than the opening in the pressure-tight container with 100 parts by weight of Composition B. Insert collapsible container and affix valve means to communicate individually with the two compositions, the valve means being constructed such that actuation causes flow of Compositions A and B in the relative proportions of 1:1. Pressurize container with 8 parts by weight of a mixture of 50% dichlorodifluoromethane and 50% 1,2-dichloro-1,1,2,2-tetrafluoroethane. Actuation of the valve means results in the mixing of portions of the two compositions

to yield a hair dye which is dispensed in a warmed state in a form ideally suited for hair dyeing purposes.

The following Example is illustrative of the use of a propellent system modified by the presence of pentane to impart delayed foaming of a hair dye composition after application to the hair.

EXAMPLE VI

The following compositions are utilized to prepare a package of the form illustrated in U.S. Patent No. 2,973,883 for the purpose of dispensing a hair dye.

A. *Hydrogen Peroxide Composition*

	Parts by Weight
Acetophenetidin	.04
Polyoxyethylene (2) stearyl ether	2.02
Polyoxyethylene (20) stearyl ether	1.73
Cetyl alcohol	1.0
Hydrogen Peroxide—35%	30.0
H_3PO_4—10%	0.20
Water, deionized	q.s.
	100.00

B. *Oxidation Hair Dye Composition*

Oleic acid	25.0
Polyoxyethylene (4) lauryl ether	5.0
Polyoxyethylene (23) lauryl ether	5.0
Ethoxylated (25) lanolin alcohol	1.0
Lecithin	1.25
Isopropanol (99%)	10.0
Di-sodium ethylenediamine tetracetate	0.1
Sodium sulfite anhydrous	0.4
Sod. thiosulfate.$5H_2O$	4.06
Sod. molybdate .$2H_2O$	0.029
Pyro gallic acid	0.25
Resorcinol	0.20
Ortho amino phenol	0.05
Para amino phenol	0.40
Para phenylene diamine	0.10
2.4-diamino anisol	0.60
para-nitro-ortho-phenylenediamine	0.30
ortho-nitro-para-phenylenediamine	0.70
ortho-nitro-para-aminophenol	0.30
Propylene glycol	4.0
NH_4OH 28%	17.14
Perfume	0.25
Potassium Chloride	0.40
Water, Deionized	q.s.
	100.00

Fill 100 parts by weight of Composition A into a pressure-tight container. Fill a collapsible container having a diameter smaller than the opening in the pressure-tight container with 100 parts by weight of Composition B. Insert collapsible container and affix valve means to communicate individually with the two compositions, the valve means being constructed such that actuation causes flow of Compositions A and B in the relative proportions of 1:1. Pressurize container with 16 parts by weight of a mixture of 50% pentane and 50% 1,2-dichloro-1,1,2,2-tetrafluoroethane. Actuation of the valve means results in the mixing of portions of the two compositions to yield a hair dye which is dispensed in a form ideally suited for hair dyeing purposes. Upon dispensing, the mixture is in the form of a thick, compact liquid which, after a time lag of 4 seconds, expands into a foam. The initial liquid state permits penetration of the composition to surround all hair on the head and the subsequent foam has good dimensional stability, thereby holding the composition to enable uniform dyeing action to take place.

In all the examples, uniform proportioning of the two compositions is effected throughout the life of the package, even when the package is shaken prior to use.

WHAT WE CLAIM IS:—

1. A package adapted for the dispensing of a hair dye composition, which package comprises a container with means to maintain two compositions therein isolated from each other, the first of the compositions being an oxidation hair dye composition which comprises o-aminophenol, pyrogallol, resorcinol and o-nitro-p-phenylenediamine and the second of the compositions being an oxidising agent composition comprising hydrogen peroxide, and valve means communicating with each of the compositions whereby the application of pressure to the compositions and actuation of the valve means results in the mixing of portions of each of the compositions and dispensing of the resulting mixture from the package as a hair dye composition.

2. A package as claimed in claim 1 wherein the first composition also comprises an alkaline substance adapted to produce a pH in the range of 8.5 to 10.0 in the hair dye composition dispersed from the package.

3. A package as claimed in claim 2 wherein the alkaline substance is ammonia, ammonium hydroxide, a lower alkyl or lower alkanol substituted ammonium hydroxide or sulfonium hydroxide, wherein the lower alkyl or lower alkanol portion contains 1 or 2 carbon atoms or a lower alkanolamine containing 2 to 4 carbon atoms.

4. A package as claimed in claim 3 wherein the alkaline substance is tetramethyl ammonium hydroxide, tetraethyl ammonium hydroxide, tetraethanol ammonium hydroxide, trimethyl sulfonium hydroxide, monoisopropanolamine, monoethanolamine or monobutanolamine.

5. A package as claimed in any one of the preceding claims the first composition also comprises a reducing agent and/or a decomposition catalyst for the oxidising agent.

6. A package as claimed in claim 5 wherein the reducing agent is sulfur dioxide or a salt derived therefrom such as an alkali metal sulfite or bi-sulfite, thiourea, 1-phenyl-2-thiobarbituric or a derivative thereof, or an alkali metal thiosulfate.

7. A package as claimed in claim 5 or claim 6 wherein the decomposition catalyst is silver, lead, iron, chromium, bismuth, copper, titanium, molybdenum, silicon, an oxide or salt of the foregoing, activated carbon or an enzymatic system such as catalase.

8. A package as claimed in any one of claims 5 to 7 wherein the amount of oxidising agent is sufficient to warm the dispensed hair dye composition by means of heat liberated on reduction and/or decomposition.

9. A package as claimed in any one of the preceding claims wherein the second composition also comprises a stabilizer and/or preservative for the oxidising agent.

10. A package as claimed in any one of the preceding claims wherein the second composition also comprises an acid ingredient.

11. A package as cliamed in claim 10 wherein the acid ingredient is phosphoric acid.

12. A package as claimed in any one of the preceding claims wherein a propellant is incorporated in the first composition and/or the second composition.

13. A package as claimed in claim 12 wherein the propellant has a vapor pressure of 12 to 85 pounds per square inch gauge at 70°F.

14. A package as claimed in claim 12 or claim 13 wherein the propellant consists of a saturated aliphatic hydrocarbon, a chlorofluoralkane containing not more than two carbon atoms and at least one fluorine atom, nitrogen, carbon dioxide, nitrous oxide, dimethyl ether or any mixture thereof.

15. A package as claimed in any one of claims 12 to 14 wherein a modifier to adjust solubility and volatility of the propellant is present.

16. A package as claimed in claim 15 wherein the modifier is pentane.

17. A package as claimed in any one of the preceding claims wherein a humectant, fragrant, surfactant, emulsifier or any combination thereof is incorporated in the first composition and/or the second composition.

18. A package as claimed in any one of the preceding claims, which package is adapted for the dispensing of a hair dye composition therefrom in aerosol form.

19. A package as claimed in claim 18 wherein a liquefied gas is provided in one of the compositions contained within the main body portion of the container and wherein the other of the compositions is contained within a separate compartment within the container separated from the composition in the main body portion of the container by a movable wall operable by differential pressure between the compositions upon actuation of said valve means.

20. A package as claimed in claim 19 wherein the movable wall is the form of a movable piston or a collapsible bag.

21. A package as claimed in claim 19 or claim 20 wherein the first composition comprising an oxidation hair dye is contained within the separate compartment.

22. A package as claimed in any one of claims 1 to 17 wherein the package comprises a two-chambered container, the chambers separated by a rigid wall and each chamber being fitted with a valve leading to a common discharge conduit and both the first and second composition being pressurized.

23. A package as claimed in any one of claims 1 to 17 wherein one of the compositions is pressurized and is present in a body portion of the container and the other composition is in a chamber surrounding a dip tube such that the vapor pressure of the composition in the body portion of the container bears upon the other composition and both compositions are dispensed on actuation of the valve means.

24. A package as claimed in any one of claims 1 to 17 wherein one of the compositions is pressurized and venturi action of the pressurized composition provides the motive force for dispensing the other composition.

25. A package as claimed in claim 1 and substantially as hereinbefore described with reference to any one of the Examples.

26. A hair dye composition whenever dispensed from a package as claimed in any one of the preceding claims.

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